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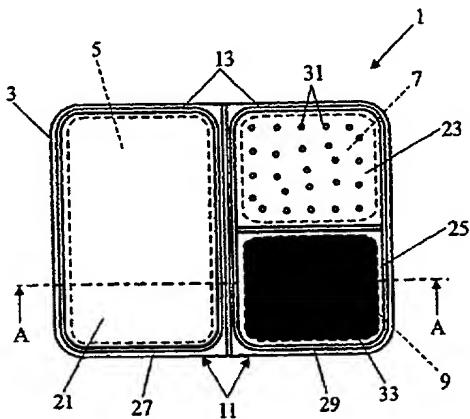
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(54) Title: METHOD OF SEPARATELY PACKAGING DIFFERENT KINDS OF FOOD AND PACKAGE THEREFORE



WO 01/12523 A1

(57) Abstract: In a working method for the separate packaging of different types of food in a single package, food is placed on a tray (3) with different compartments (5, 7, 9) open on one side, with one type of food being placed in each compartment. Subsequently a film structure film (11) is placed above the open sides of the compartments, with a part (21, 23, 25) of the film structure being placed above each compartment. Then the film structure (11) is fastened to the tray (3) around the openings of the compartments. To optimize the conditions in which the food is packaged for each type of food, the film structure (11) is comprised and/or processed such that the characteristics of the specified parts (21, 23, 25) of the film structure are different from each other. These circumstances can be improved even more by first determining, before comprising and/or processing the film structure (11), the characteristics of the food and then executing the composition and/or processing of the film structure (11) depending on the characteristics of the food.

UNITED STATES PATENT AND TRADEMARK OFFICE  
DOCUMENT CLASSIFICATION BARCODE SHEET



**Miscellaneous**

**10**

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FORM PTO-1390 (REV. 9-2001)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
				VERHEES 207-KFM
				U.S. APPLICATION NO. (If known, see 37 CFR 1.5)
				<b>10/018675</b>
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				
INTERNATIONAL APPLICATION NO. <b>PCT/NL00/00423</b>		INTERNATIONAL FILING DATE <b>16/JUNE/2000</b>		PRIORITY DATE CLAIMED <b>16/JUNE/1999</b>
TITLE OF INVENTION <b>METHOD OF SEPARATELY PACKAGING DIFFERENT KINDS OF FOOD AND PACKAGE THEREFORE</b>				
APPLICANT(S) FOR DO/EO/US <b>BONGERS, Cornelis Margaretha Theodorus Maria</b>				
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:				
<p>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <ul style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> has been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ul> <p>6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).</p> <ul style="list-style-type: none"> <li>a. <input type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ul> <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <ul style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ul> <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p>				
<p><b>Items 11 to 20 below concern document(s) or information included:</b></p> <p>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.</p> <p>14. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input type="checkbox"/> Other items or information:</p>				

14 DEC 2001

ATTORNEY'S DOCKET NUMBER

VERHEES 207-KEM

21.  The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1040.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$890.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$740.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00

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CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$
Total claims	12 - 20 =	0	x \$18.00	\$
Independent claims	2 - 3 =	0	x \$84.00	\$
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	\$
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$ 1020.00</b>
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				+ \$ 510.00
<b>SUBTOTAL =</b>				<b>\$ 510.00</b>
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$
<b>TOTAL NATIONAL FEE =</b>				<b>\$ 510.00</b>
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$
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Signature Karl F. Milde, Jr.

NAME

24,822

REGISTRATION NUMBER

Signature

VERHEES 207-KFM  
P.BONG/US-0396

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : MARIA THEODORUS MARGARETHA CORNELIS BONGERS

Serial No.: 10/018,675

Filed : December 14, 2001

For : METHOD OF SEPARATELY PACKAGING DIFFERENT  
KINDS OF FOOD AND PACKAGE THEREFORE

-----  
February 6, 2002

Hon. Commissioner of Patents

& Trademarks

Washington, DC 20231

ATTN.: BOX PCT

Sir:

SUPPLEMENTAL PRELIMINARY AMENDMENT  
AND SUBMISSION OF DECLARATION

Prior to examination, please amend the above-identified  
patent application as follows:

Please change the order of the "given" name of the  
applicant from "MARIA THEODORUS MARGARETHA CORNELIS" to

-- CORNELIS MARGARETHA THEODORUS MARIA --

Attached herewith is the "Mark-up Version" of the  
Preliminary Amendment which was filed together with the  
national stage application referenced above.

Also attached is the Declaration and Power of Attorney  
executed by the inventor.

The fee for the surcharge of \$65 was paid on December  
14, 2001, together with the filing fee when filing this

10/018675

531 Rec'd PCTA

14 DEC 2001

VERHEES 207-KFM  
P.BONG/US-0396

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : MARIA THEODORUS MARGARETHA CORNELIS BONGERS

Serial No.: TO BE ASSIGNED

Filed : HEREWITH

For : METHOD FOR SEPARATELY PACKAGING DIFFERENT  
KINDS OF FOOD AND PACKAGE THEREFORE

-----  
December 14, 2001

Hon. Commissioner of Patents  
& Trademarks  
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to examination, please amend the above-identified  
patent application as follows:

IN THE TITLE:

Please change the title of the original application, as  
filed, to read as follows:

WORKING METHOD FOR SEPARATELY PACKAGING VARIOUS TYPES OF  
FOOD IN A SINGLE PACKAGE AS WELL AS PACKAGE MANUFACTURED  
ACCORDING TO THIS WORKING METHOD

IN THE SPECIFICATION (IN THE ORIGINAL APPLICATION AS FILED):

Please change pages 1, line 5 to page 5, line 32 to  
read as follows:

10018675-0396

application as evidenced by the enclosed copy of PTO Form 1390.

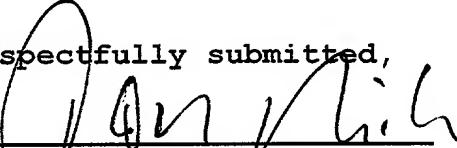
It is requested that the papers submitted herewith be joined up with the papers previously filed in this application.

ADDITIONAL FEE:

Please charge any insufficiency of fee, or credit any excess, to Deposit Account No. 50-0427.

R E M A R K S

This Supplemental Preliminary Amendment is being filed to change the order of the applicant's given name and to comply with U.S. Patent Practice. No new matter has been introduced.

Respectfully submitted,  
By   
Karl F. Milde, Jr.  
Reg. No. 24,822

MILDE, HOFFBERG & MACKLIN, LLP  
10 Bank Street - Suite 460  
White Plains, NY 10606  
(914) 949-3100

I hereby certify that this correspondence is being deposited with the United States Postal Services as first class mail in an envelope addressed to: BOX PCT, Commissioner of Patents & Trademarks, Washington, DC 20231,  
on 2-6-02

By MILDE, HOFFBERG & MACKLIN, LLP  
Date 2-6-02

VERSION TO SHOW MARKINGS OF CHANGES MADE

IN THE TITLE:

Please change the title of the original application, as filed, to read as follows:

-- WORKING METHOD FOR SEPARATELY PACKAGING VARIOUS TYPES OF FOOD IN A SINGLE PACKAGE AS WELL AS PACKAGE MANUFACTURED ACCORDING TO THIS WORKING METHOD --

IN THE SPECIFICATION (IN THE ORIGINAL APPLICATION AS FILED):

Please change pages 1, line 5 to page 5, line 32 to read as follows:

-- BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to a package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is fastened to the tray around the openings of the compartments, with part of the film structure being present above each compartment of the tray, and at least a number of parts of the film structure are different from each other. The term film structure can be understood to mean either one single film or a combination of various films on and/or beside each other, as well as film with a substance or a sticker on it.

Such packages are usually intended to allow consumers to quickly and easily prepare their own meals. Many or all of the necessary ingredients are present so that the consumer himself need not buy all the ingredients separately.

#### Prior art

Such a package is known from the U.S. Patent No. 5,126,518. In this known package some parts are provided with a layer of microwave-reflective material and other parts not to effect a decreased flow of microwave energy to the foodstuffs in certain zones of the tray and an enhanced flow of microwave energy to the foodstuffs in the remainder of the tray.

#### SUMMARY OF THE INVENTION

An objective of the invention is to provide a package of the type described in the preamble, in which individual circumstances can be created for the various types of food. for preservation of the food in the different compartments. To this end the package according to the invention is characterized by the fact that these parts are gas-permeable and/or that a material which reacts with gasses in the

respective compartments is provided in and/or on the film structure. This creates circumstances for the food in the package that are adapted per type of food. For example the space in a compartment of the package can be fully sealed off from the outside environment by an gas-impermeable part of the film structure, or indeed interacting with the outside environment by way of a gas-permeable part of the film structure. For example in at least some of the parts of the film structure there can be perforations.

In addition, the various characteristics can be acquired because the film structure is comprised of various films, for example a first film and a second film or a sticker that is present on parts of the first film, or two or more films beside each other with different characteristics.

It is noted that from the U.S. Patent No. 4,935,252 that a food package is known having a film structure comprising two films of which one is applied on the other and can be removed. This package contains only one compartment. Furthermore the differentiation of the film structure only relates to characteristics for preparation of the food and not for preservation.

It is noted from European Patent No. 0,293,794 B1 that a working method is known in which various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen.

By utilizing a differentiated film structure according to the present invention in which the closure of each compartment can be coordinated with the type of food present in the compartment and the condition of the food, an optimal environment can be created for the food. In this way even in a package where no separate gas atmospheres are present in the compartments good circumstances can nonetheless be obtained for the food.

For example the material can be an active substance which is placed in and/or on the parts of the film structure. The substance might be a material that reacts with the oxygen in the compartment and thus removes the oxygen from the compartment and the food. This is desirable for those types of food that can be stored best in a low-oxygen atmosphere, for example for the protection of flavor

and aroma against oxidation. Such substances are generally known, for example films that contain iron powder. The iron powder rusts and oxygen is withdrawn from the food and the atmosphere in the compartment. Instead of iron powder ascorbic acid or sulphite can also be used as an active substance. These substances, too, oxidize and oxygen is withdrawn from the food and the atmosphere in the compartment. In addition, enzymatic-acting substances can be applied to the film, such as glucose oxidase or ethanol oxidase in which enzymes are catalysts for an oxygen-consuming reaction.

The substance can also be a material, for example, that absorbs oxygen, for example a film of nylon polymer in which cobalt is present for a cobalt-catalyzed oxidation of the nylon polymer. Instead of, or in addition to, oxygen-absorbing substances, the film or sticker can also contain CO<sub>2</sub> absorbing or emitting substances, or ethylene absorbing substances, ethanol emitting substances, moisture-absorbing substances, etc. All of these substances are generally known.

The material can also be formed by applying a film structure that is activated upon radiation. By only radiating a number of the parts of the film structure, a

film structure with varying characteristics is created. The material of the film structure should in this case be such that its characteristics can be changed by radiation or because certain substances in the material of the film structure can be activated by radiation. For example as a result of radiation the material can be activated such that for example it obtains the characteristic that it reacts to oxygen and thus removes the oxygen from the compartment. Such a film is known from the published European Patent Application No. EP-A 0,520,257. This known film contains a combination of an oxidizable organic compound and a metallic transference catalyst. Here oxidation of the organic compound can be initiated by radiation. This known package consists of only one compartment. Furthermore in this known package the entire film is irradiated, there is no differentiation of the film. The manner of radiating is known from the published International Patent Application WO 99/21699. In this way food can be packaged both in a low-oxygen environment and a high-oxygen environment in a single package.

The invention also relates to a working method for separately packaging various types of food in a single package, comprising: placing food on a tray with different

compartments open on one side, with one type of food being placed in each compartment, then placing a film structure above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, at least the characteristics of some of the specified parts of the film structure are different from each other, followed by sealing fastening the film structure to the tray around the openings of the compartments.

As far as the working method package is concerned the invention is characterized in that the film structure is processed such that some of the parts of the film structure are gas permeable and/or are provided with a material in and/or on the film structure which material reacts with gasses in the respective compartments.

Processing the film structure can comprise for example placing perforations in at least a number of the parts of the film structure, for example to allow the food to breathe. The size of the perforations or the number of perforations can be adjusted depending on the degree of respiration of the food. A film with microperforations can also be used.

The composition of the film structure can for example take place by using first one film and then on parts of that

film placing a second film or sticker. The second film or sticker can for example contain the above-mentioned active substance or consist of one of the above-mentioned materials that influence radiation. Or the first film can be perforated and the second film or sticker can be gas impermeable and seal off parts of the first film.

The film structure can also be composed for example by fastening two films to each other, after which one of the films is locally removed. The one film can for example be perforated and the other film can be a gas-impermeable film that is placed in separate parts on the perforated film. Parts of the gas-impermeable film can for example be peeled off the perforated film.

Yet another method of composing the film structure can for example be to place two or more films with different characteristics beside each other on the tray. For example the various films can contain an active substance, be perforated, be made of a radiation-influencing material, or be gas impermeable. Possibly the films can first be connected with each other before being placed on the tray.

The composition and/or processing of the film structure preferably takes place before food is placed on the tray.

This decreases the chance that waste materials that may occur during the processing end up in the food.

Another favorable embodiment of the working method according to the invention is characterized in that, before the film structure is composed and/or processed, first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place according to the characteristics of the food. Thus the conditions under which the food is stored can be better coordinated with the actual condition of the food. For example, if the respiration of the food is high, it may be desirable that the space in the compartment be more connected with the environment, such that a film structure with high permeability is desirable.

For a full understanding of the present invention, reference should now be made to the following detailed description of the preferred embodiments of the invention as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an embodiment of the package according to the invention in a top view.

Figure 2 shows the illustration in Figure 1 as a cross-section.

Figure 3 shows a diagram of a first embodiment of the working method according to the invention. --

IN THE CLAIMS:

In line 1, change the title "Claims" and insert:

C L A I M S

What is claimed is:

Please delete claims 1-18 and insert the following new claims:

-- 19. In a package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is sealed to the tray around the openings of the compartments, wherein a part of the film structure is present above each compartment of the tray and wherein at

least a number of these parts of the film structure are different from each other, the improvement wherein said parts of the film structure are at least one of (1) gas-permeable and (2) provided with a material which reacts with gasses in the respective compartments and which is disposed at least one of in and on some of these parts of the film structure.

20. Package according to claim 19, wherein there are perforations in some of the parts of the film structure.

21. Package according to claim 19, wherein the film structure is comprised of a first film in which on some parts of this film at least one of a second film and a sticker is present.

22. Package according to claim 19, wherein the film structure is comprised of two or more adjacent films with different characteristics.

23. In a working method for separately packaging various types of food in a single package, said method comprising the steps of:

(a) placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment;

(b) placing a film structure above the open sides of the compartments, wherein a part of the film structure is placed above each compartment and wherein at least the characteristics of some of the specified parts of the film structure are different from each other; and

(c) sealing the film structure to the tray around the openings of the compartments;  
the improvement wherein the film structure is processed such that some of the parts of the film structure are at least one of (1) gas permeable and (2) are provided with a material which reacts with gasses in the respective compartments and which is disposed at least one of in and on some of these parts of the film structure.

24. Working method according to claim 23, wherein some of the parts of the film structure are irradiated.

25. Working method according to claim 23, wherein perforations are made in some of the parts of the film structure.

26. Working method according to claim 23, wherein the film structure is produced by taking a first film on parts of which at least one of a second film and a sticker is placed.

27. Working method according to claim 23, wherein the film structure is produced by fastening two films on each other, after which one of the films is removed locally.

28. Working method according to claim 23, wherein the film structure is produced of two or more films with different characteristics which are adjacent to each other.

29. Working method according to claim 23, wherein at least one of the composition and processing of the film structure takes place before food is placed on the tray.

30. Working method according to claim 23, wherein before the film structure is processed first the characteristics of the food are determined, after which at least one of the composition and processing of the film structure takes place in accordance with the characteristics of the food. --

**IN THE ABSTRACT:**

Please add the Abstract of the Disclosure on the  
attached sheet.

-- ABSTRACT OF THE DISCLOSURE

In a working method for the separate packaging of different types of food in a single package, food is placed on a tray (3) with different compartments (5, 7, 9) open on one side, with one type of food being placed in each compartment.

Subsequently, a film structure film (11) is placed above the open sides of the compartments, with a part (21, 23, 25) of the film structure being placed above each compartment.

Then the film structure (11) is fastened to the tray (3) around the openings of the compartments. To optimize the conditions in which the food is packaged for each type of food, the film structure (11) is comprised and/or processed such that the characteristics of the specified parts (21, 23, 25) of the film structure are different from each other.

These circumstances can be improved even more by first determining, before comprising and/or processing the film structure (11), the characteristics of the food can then executing the composition and/or processing of the film structure (11) depending on the characteristics of the food.--

## BACKGROUND OF THE INVENTION

### Field of the invention

The invention relates to a package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is fastened to the tray around the openings of the compartments, with part of the film structure being present above each compartment of the tray, and at least a number of parts of the film structure are different from each other. The term film structure can be understood to mean either one single film or a combination of various films on and/or beside each other, as well as film with a substance or a sticker on it.

Such packages are usually intended to allow consumers to quickly and easily prepare their own meals. Many or all of the necessary ingredients are present so that the consumer himself need not buy all the ingredients separately.

### Prior art

Such a package is known from the U.S. Patent No. 5,126,518. In this known package some parts are provided

with a layer of microwave-reflective material and other parts not to effect a decreased flow of microwave energy to the foodstuffs in certain zones of the tray and an enhanced flow of microwave energy to the foodstuffs in the remainder of the tray.

#### SUMMARY OF THE INVENTION

An objective of the invention is to provide a package of the type described in the preamble, in which individual circumstances can be created for the various types of food. for preservation of the food in the different compartments. To this end the package according to the invention is characterized by the fact that these parts are gas-permeable and/or that a material which reacts with gasses in the respective compartments is provided in and/or on the film structure. This creates circumstances for the food in the package that are adapted per type of food. For example the space in a compartment of the package can be fully sealed off from the outside environment by an gas-impermeable part of the film structure, or indeed interacting with the outside environment by way of a gas-permeable part of the film structure. For example in at least some of the parts of the film structure there can be perforations.

In addition, the various characteristics can be acquired because the film structure is comprised of various films, for example a first film and a second film or a sticker that is present on parts of the first film, or two or more films beside each other with different characteristics.

It is noted that from the U.S. Patent No. 4,935,252 that a food package is known having a film structure comprising two films of which one is applied on the other and can be removed. This package contains only one compartment. Furthermore the differentiation of the film structure only relates to characteristics for preparation of the food and not for preservation.

It is noted from European Patent No. 0,293,794 B1 that a working method is known in which various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen.

By utilizing a differentiated film structure according to the present invention in which the closure of each

compartment can be coordinated with the type of food present in the compartment and the condition of the food, an optimal environment can be created for the food. In this way even in a package where no separate gas atmospheres are present in the compartments good circumstances can nonetheless be obtained for the food.

For example the material can be an active substance which is placed in and/or on the parts of the film structure. The substance might be a material that reacts with the oxygen in the compartment and thus removes the oxygen from the compartment and the food. This is desirable for those types of food that can be stored best in a low-oxygen atmosphere, for example for the protection of flavor and aroma against oxidation. Such substances are generally known, for example films that contain iron powder. The iron powder rusts and oxygen is withdrawn from the food and the atmosphere in the compartment. Instead of iron powder ascorbic acid or sulphite can also be used as an active substance. These substances, too, oxidize and oxygen is withdrawn from the food and the atmosphere in the compartment. In addition, enzymatic-acting substances can be applied to the film, such as glucose oxidase or ethanol

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oxidase in which enzymes are catalysts for an oxygen-consuming reaction.

The substance can also be a material, for example, that absorbs oxygen, for example a film of nylon polymer in which cobalt is present for a cobalt-catalyzed oxidation of the nylon polymer. Instead of, or in addition to, oxygen-absorbing substances, the film or sticker can also contain CO<sub>2</sub> absorbing or emitting substances, or ethylene absorbing substances, ethanol emitting substances, moisture-absorbing substances, etc. All of these substances are generally known.

The material can also be formed by applying a film structure that is activated upon radiation. By only radiating a number of the parts of the film structure, a film structure with varying characteristics is created. The material of the film structure should in this case be such that its characteristics can be changed by radiation or because certain substances in the material of the film structure can be activated by radiation. For example as a result of radiation the material can be activated such that for example it obtains the characteristic that it reacts to oxygen and thus removes the oxygen from the compartment. Such a film is known from the published European Patent

Application No. EP-A 0,520,257. This known film contains a combination of an oxidizable organic compound and a metallic transference catalyst. Here oxidation of the organic compound can be initiated by radiation. This known package consists of only one compartment. Furthermore in this known package the entire film is irradiated, there is no differentiation of the film. The manner of radiating is known from the published International Patent Application WO 99/21699. In this way food can be packaged both in a low-oxygen environment and a high-oxygen environment in a single package.

The invention also relates to a working method for separately packaging various types of food in a single package, comprising: placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment, then placing a film structure above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, at least the characteristics of some of the specified parts of the film structure are different from each other, followed by sealing fastening the film structure to the tray around the openings of the compartments.

As far as the working method package is concerned the invention is characterized in that the film structure is processed such that some of the parts of the film structure are gas permeable and/or are provided with a material in and/or on the film structure which material reacts with gasses in the respective compartments.

Processing the film structure can comprise for example placing perforations in at least a number of the parts of the film structure, for example to allow the food to breathe. The size of the perforations or the number of perforations can be adjusted depending on the degree of respiration of the food. A film with microperforations can also be used.

The composition of the film structure can for example take place by using first one film and then on parts of that film placing a second film or sticker. The second film or sticker can for example contain the above-mentioned active substance or consist of one of the above-mentioned materials that influence radiation. Or the first film can be perforated and the second film or sticker can be gas impermeable and seal off parts of the first film.

The film structure can also be composed for example by fastening two films to each other, after which one of the

films is locally removed. The one film can for example be perforated and the other film can be a gas-impermeable film that is placed in separate parts on the perforated film. Parts of the gas-impermeable film can for example be peeled off the perforated film.

Yet another method of composing the film structure can for example be to place two or more films with different characteristics beside each other on the tray. For example the various films can contain an active substance, be perforated, be made of a radiation-influencing material, or be gas impermeable. Possibly the films can first be connected with each other before being placed on the tray.

The composition and/or processing of the film structure preferably takes place before food is placed on the tray. This decreases the chance that waste materials that may occur during the processing end up in the food.

Another favorable embodiment of the working method according to the invention is characterized in that, before the film structure is composed and/or processed, first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place according to the characteristics of the food. Thus the conditions under which the food is stored can be better

coordinated with the actual condition of the food. For example, if the respiration of the food is high, it may be desirable that the space in the compartment be more connected with the environment, such that a film structure with high permeability is desirable.

For a full understanding of the present invention, reference should now be made to the following detailed description of the preferred embodiments of the invention as illustrated in the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows an embodiment of the package according to the invention in a top view.

Figure 2 shows the illustration in Figure 1 as a cross-section.

Figure 3 shows a diagram of a first embodiment of the working method according to the invention.

#### IN THE CLAIMS:

In line 1, change the title "Claims" and insert:

#### C L A I M S

What is claimed is:

Please delete claims 1-18 and insert the following new claims:

19. In a package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is sealed to the tray around the openings of the compartments, wherein a part of the film structure is present above each compartment of the tray and wherein at least a number of these parts of the film structure are different from each other, the improvement wherein said parts of the film structure are at least one of (1) gas-permeable and (2) provided with a material which reacts with gasses in the respective compartments and which is disposed at least one of in and on some of these parts of the film structure.

20. Package according to claim 19, wherein there are perforations in some of the parts of the film structure.

21. Package according to claim 19, wherein the film structure is comprised of a first film in which on some

parts of this film at least one of a second film and a sticker is present.

22. Package according to claim 19, wherein the film structure is comprised of two or more adjacent films with different characteristics.

23. In a working method for separately packaging various types of food in a single package, said method comprising the steps of:

(a) placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment;

(b) placing a film structure above the open sides of the compartments, wherein a part of the film structure is placed above each compartment and wherein at least the characteristics of some of the specified parts of the film structure are different from each other; and

(c) sealing the film structure to the tray around the openings of the compartments;

the improvement wherein the film structure is processed such that some of the parts of the film structure are at least one of (1) gas permeable and (2) are provided with a

material which reacts with gasses in the respective compartments and which is disposed at least one of in and on some of these parts of the film structure.

24. Working method according to claim 23, wherein some of the parts of the film structure are irradiated.

25. Working method according to claim 23, wherein perforations are made in some of the parts of the film structure.

26. Working method according to claim 23, wherein the film structure is produced by taking a first film on parts of which at least one of a second film and a sticker is placed.

27. Working method according to claim 23, wherein the film structure is produced by fastening two films on each other, after which one of the films is removed locally.

28. Working method according to claim 23, wherein the film structure is produced of two or more films with different characteristics which are adjacent to each other.

29. Working method according claim 23, wherein at least one of the composition and processing of the film structure takes place before food is placed on the tray.

30. Working method according to claim 23, wherein before the film structure is processed first the characteristics of the food are determined, after which at least one of the composition and processing of the film structure takes place in accordance with the characteristics of the food.

IN THE ABSTRACT:

Please add the Abstract of the Disclosure on the attached sheet.

ADDITIONAL FEE:

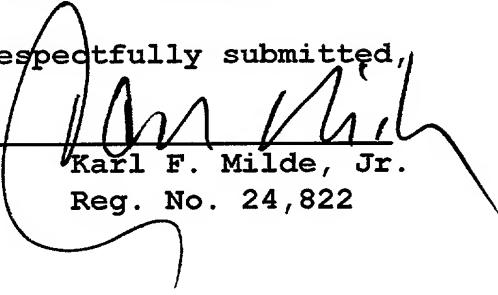
Please charge any insufficiency of fee, or credit any excess, to Deposit Account No. 50-0427.

R E M A R K S

This Preliminary Amendment is being filed to eliminate multiple dependencies in the claims, to place the claims in proper form under United States Patent Practice, to add an Abstract and to introduce the amendments which were made to

the International Application No. PCT/NL00/00423 under

Article 19. No new matter has been introduced.

Respectfully submitted,  
By   
Karl F. Milde, Jr.  
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## ABSTRACT OF THE DISCLOSURE

In a working method for the separate packaging of different types of food in a single package, food is placed on a tray (3) with different compartments (5, 7, 9) open on one side, with one type of food being placed in each compartment. Subsequently, a film structure film (11) is placed above the open sides of the compartments, with a part (21, 23, 25) of the film structure being placed above each compartment. Then the film structure (11) is fastened to the tray (3) around the openings of the compartments. To optimize the conditions in which the food is packaged for each type of food, the film structure (11) is comprised and/or processed such that the characteristics of the specified parts (21, 23, 25) of the film structure are different from each other. These circumstances can be improved even more by first determining, before comprising and/or processing the film structure (11), the characteristics of the food can then executing the composition and/or processing of the film structure (11) depending on the characteristics of the food.

Working method for separately packaging various types of food in a single package as well as package manufactured according to this working method.

5      BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to a working method for separately packaging various types of food in a single package, comprising: placing food on a tray with various compartments that are open on one side with one type of food placed in each compartment after which a film structure is placed above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, followed by fastening the film structure on the tray around the open sides of the compartments package comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is fastened to the tray around the openings of the compartments, with part of the film structure being present above each compartment of the tray, and at least a number of parts of the film structure are different from each other. The term film structure can be understood to mean either one single film or a combination of various films on and/or beside each other, as well as film with a substance or a sticker on it.

Such packages are usually intended to allow consumers to quickly and easily prepare their own meals. Many or all of the necessary ingredients are present so that the consumer himself need not buy all the ingredients separately.

Prior art

Such a working method is known from European patent no. 0 293 794

B1. In this known working method various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working

method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen. To this end, in the known working method the option exists of introducing preservative gases into the package during packaging in the various compartments of the package. In the known working method the possibility also exists of creating overpressure, underpressure, or a vacuum in one or more of the compartments during packaging. package is known from US 5.126.518. In this known package some parts are provided with a layer of microwave-reflective material and other parts not to effect a decreased flow of microwave energy to the foodstuffs in certain zones of the tray and an enhanced flow of microwave energy to the foodstuffs in the remainder of the tray.

#### Summary of the invention

An objective of the invention is to provide a package working method of the type described in the preamble for the packaging of various types of food in a single package, in which even better individual circumstances can be created for the various types of food than with the known working method. for preservation of the food in the different compartments. To this end the package the working method according to the invention is characterized by the fact that the film structure is composed and/or processed such that the characteristics of at least some of the specified parts of the film structure are different from each other these parts are gas-permeable and/or that a material which reacts with gasses in the respective compartments is provided in and/or on the film structure. This creates circumstances for the food in the package that are even better adapted per type of food. For example the space in a compartment of the package can be fully sealed off from the outside environment by an gas-impermeable part of the film structure, or indeed interacting with the outside environment by way of a gas-permeable part of the film structure. For example in at least some of the parts of the film structure there can be perforations, in and/or on at least a number of parts of the film structure an active element or active

substance can be present, or at least in a number of parts of the film structure a passive element can be present that manipulates radiation.

In addition, the various characteristics can be acquired because the film structure is comprised of various films, for example a first film and a second film or a sticker that is present on parts of the first film, or two or more films beside each other with different characteristics.

It is noted that from US-A-4.935.252 a food package is known having a film structure comprising two films of which one is applied on the other and can be removed. This package contains only one compartment. Furthermore the differentiation of the film structure only relates to characteristics for preparation of the food and not for preservation.

The differences between the characteristics of the parts of the film structure are preferably different in a material sense, for example gas permeability, which factors have an influence upon the condition of the food in the compartments. The imprinting of parts of a transparent film with ink has little or no effect on the condition of the food so there is hardly a difference from the parts of the film which are not imprinted.

It is noted that from European patent no. 0 293 794 B1 a working method is known in which various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen.

By utilizing a differentiated film structure according to the present invention in which the closure of each compartment can be coordinated with the type of food present in the compartment and the condition of the food, an optimal environment can be created for the food. In this way even in a package where no separate gas atmospheres are present in the compartments good circumstances can nonetheless be obtained for the food.

An embodiment of the working method according to the invention is characterized by the fact that in the composition and/or processing of the film

structure in at least a number of the specified parts an active element can be introduced into the film structure. The term active element should be understood to mean an element that reacts with substances in the food or substances that are emitted by the food.

5 Preferably the active element in the form of For example the material can be an active substance which is placed in and/or on the parts of the film structure. For example The substance might be a material that reacts with the oxygen in the compartment and thus removes the oxygen from the compartment and the food. This is desirable for those types of food that can be stored best in a low-oxygen atmosphere, 10 for example for the protection of flavor and aroma against oxidation. Such substances are generally known, for example films that contain iron powder. The iron powder rusts and oxygen is withdrawn from the food and the atmosphere in the compartment. Instead of iron powder ascorbic acid or sulphite can also be used as an active substance. These substances, too, oxidize and oxygen is withdrawn from the food and the atmosphere in the compartment. In addition, enzymatic-acting substances can be applied to the film, such as glucose oxidase or ethanol oxidase in which enzymes are 15 catalysts for an oxygen-consuming reaction.

The substance can also be a material, for example, that absorbs oxygen, for example a film of nylon polymer in which cobalt is present for a cobalt-catalyzed 20 oxidation of the nylon polymer. Instead of, or in addition to, oxygen-absorbing substances, the film or sticker can also contain CO<sub>2</sub> absorbing or emitting substances, or ethylene absorbing substances, ethanol emitting substances, moisture-absorbing substances, etc. All of these substances are generally known.

25 The material active element can also be formed by applying a film structure that is activated upon radiation. By only radiating a number of the parts of the film structure, a film structure with varying characteristics is created. The material of the film structure should in this case be such that its characteristics can be changed by radiation or because certain substances in the material of the film structure can be activated by radiation. For example the material of the film structure can discolor in 30 response to radiation and form a light barrier. In addition, as a result of radiation the material can be activated such that for example it obtains the characteristic that it

reacts to oxygen and thus removes the oxygen from the compartment. Such a film is known from European patent application EP-A 0 520 257. This known film contains a combination of an oxidizable organic compound and a metallic transference catalyst. Here oxidation of the organic compound can be initiated by radiation. This known package consists of only one compartment. Furthermore in this known package the entire film is irradiated, there is no differentiation of the film. The manner of radiating is known from the international patent application WO 99/21699. Through this reference both documents are included in the present patent application. In this way food can be packaged both in a low-oxygen environment and a high-oxygen environment in a single package.

The invention also relates to a package manufactured according to the working method according to the invention comprising a tray with various compartments in which various types of food are present, with one type of food in each compartment, which compartments are closed off by a film structure that is connected to the tray around the openings of the compartments, where above each compartment part of the film structure is present for separately packaging various types of food in a single package, comprising: placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment, then placing a film structure above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, at least the characteristics of some of the specified parts of the film structure are different from each other, followed by sealing fastening the film structure to the tray around the openings of the compartments.

As far as the working method package is concerned the invention is characterized in that the characteristics of at least some of the parts of the film structure are different the film structure is comprised or processed such that the characteristics of at least some of the specified parts of the film structure are different from each other some of the parts of the film structure are gas permeable and/or are provided with a material in and/or on the film structure which material reacts with gasses in the respective compartments.

5a

Processing the film structure can comprise for example placing perforations in at least a number of the parts of the film structure, for example to allow the food to breathe. The size of the perforations or the number of perforations can be adjusted depending on the degree of respiration of the food. A film with microperforations can also be used.

A further embodiment of the working method according to the invention is characterized in that at the composition and/or processing of the film structure in at least some of the parts of the film structure, a passive element is introduced that manipulates radiation. Under a passive element that manipulates radiation one should think of an element that can resist radiation - for example microwaves in a microwave oven - reflect them, redistribute them, or absorb them and convert them into heat. For example an aluminum film can modify the field in a microwave such that the capacity in the microwave unit is redistributed and even heating is obtained. Materials that can absorb microwave energy and convert it into heat are, for example, aluminum, stainless steel and inconel.

The composition of the film structure can for example take place by using first one film and then on parts of that film placing a second film or sticker. The second film or sticker can for example contain the above-mentioned active substance or consist of one of the above-mentioned materials that influence radiation. Or the first film can be perforated and the second film or sticker can be gas impermeable and seal off parts of the first film.

The film structure can also be composed for example by fastening two films to each other, after which one of the films is locally removed. The one film can for example be perforated and the other film can be a gas-impermeable film that is placed in separate parts on the perforated film. Parts of the gas-impermeable film can for example be peeled off the perforated film.

Yet another method of composing the film structure can for example be to place two or more films with different characteristics beside each other on the tray. For example the various films can contain an active substance, be perforated, be made of a radiation-influencing material, or be gas impermeable. Possibly the films can first be connected with each other before being placed on the tray.

AMENDED SHEET

5b

The composition and/or processing of the film structure preferably takes place before food is placed on the tray. This decreases the chance that waste materials that may occur during the processing end up in the food.

Another favorable embodiment of the working method according to the invention is characterized in that, before the film structure is composed and/or processed, first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place according to the characteristics of the food. Thus the conditions under which the food is stored can be better coordinated with the actual condition of the food. For example, if the respiration of the food is high, it may be desirable that the space in the compartment be more connected with the environment, such that a film structure with high permeability is desirable.

#### Brief description of the drawings

The invention will be elucidated more fully below on the basis of drawings in which embodiments of the working method and the package according to the invention are shown. In these drawings:

Figure 1 shows an embodiment of the package according to the invention in a top view;

Figure 2 shows the illustration in Figure 1 as a cross-section;

Figure 3 shows a diagram of a first embodiment of the working method according to the invention;

[Further page 6, line 1]

Figure 4 shows a diagram of a second embodiment of the working method according to the invention;

Figure 5 shows a first embodiment of the composition of the film structure; and

5 Figure 6 shows a second embodiment of the composition of the film structure.

#### Detailed description of the drawings

10 In Figures 1 and 2 an embodiment of the package according to the invention is shown in a top view respectively cross-section along line A-A. The package 1 is comprised of a tray 3 that has various compartments 5, 7, and 9 that are open on top. The compartments are closed off by a film structure 11 that is fastened via sealing seams 13 to flanges 15 of the tray 3.

15 In the compartments 5, 7, 9 there are various types of food 17, 19. For each type of food an optimal closure of the compartment is present, because the film structure 11 is divided into various parts 21, 23, 25, that have different characteristics and each close off a compartment. For example part 21 and parts 23 and 25 form individual films 27 en 29 that are fastened side by side on the tray. Films 27 and 29 are for example transparent gas-impermeable films. To obtain optimal conditions in the compartments, for example, part 23 of the film 29 is provided with perforations 31 and another part 25 of the film 29 has a non-transparent sticker 33 that seals off the space in the compartment against light.

20 To further improve the conditions under which the various types of food are packaged, various preservative gases 35, 37 can be introduced into the compartments.

25 Figure 3 is a diagram showing a first embodiment of the working method according to the invention for packaging different types of food in a single package. Here in a separate production process 41 the film structure 43 is manufactured. In this production process 41 various films 45, 47 can be fastened on or on top of each other and/or the film structure can be processed. The fastening and/or the processing takes place in a machine 49.

30 The film structure 43 is then brought into a further production process 51. In this production process 51 trays 53 are filled with different types of food 55, 57. Then the film structure 43 is brought above the open side of the tray 53. Then the film structure 43

is sealed on the tray 53 by melting the film structure 43 to the tray 53 with a heated sealing stamp 59.

Figure 4 is a diagram showing a second embodiment of the working method according to the invention. Here the process of composing and/or processing the film structure is integrated into the process of filling the trays and the fastening of the film structure to the trays. After filling the compartments of the tray 53 with different types of food 55, 57 the condition of the food is measured. Depending on the conditions the machine 49 is set. In this manner for example the number of perforations per surface unit can be set. Thus the package can be even better coordinated with regard to the type of food being packaged.

The film structure can be comprised in various ways. Figure 5 shows a first embodiment of the composition of the film structure and placement on a tray. Here the two different films 61 and 63 form, side by side, the film structure 65, and each film seals off one or more compartments of the tray 67.

Figure 6 shows a second embodiment of the composition of the film structure. Here two different films 71 and 73 are fastened to each other and form a film structure. The film structure thus formed 75 possesses different parts 77 and 79 to seal off different compartments of the trays 81.

Although the invention is explained above on the basis of drawings, it should be stressed that the invention is in no way limited to the embodiments shown in the drawings. The invention also extends to all embodiments deviating from the embodiments shown in the drawings within the context defined by the claims.

CLAIMS:

1. Package (1) manufactured according to a working method according to one of the preceding claims, comprising a tray (3) with various compartments (5, 7, 9) in which different types of food (17, 19) are present, with one type of food being present in each compartment, which compartments (5, 7, 9) are closed off by a film structure (11) that is fastened sealed to the tray (3) around the openings of the compartments, above each compartment (5, 7, 9) of the tray a part (21, 23, 25) of the film structure (11) being present, characterized in that the characteristics of and at least a number of these parts (21, 23, 25) of the film structure (11) are different from each other, characterized in that these parts (21, 23, 25) are gas-permeable and/or that a material which reacts with gasses in the respective compartments is provided in and/or on some of these parts of the film structure (11).

5 10 15 20 25 30

13. Package according to claim 12, characterized in that in at least some of the specified parts an active element is present in the film structure.

14. Package according to claim 13, characterized in that the active element in the form of an active substance is present in and/or on the parts of the film structure.

2. Package according to claim 1 12, 13 or 14, characterized in that there are perforations (31) in at least some of the parts (23) of the film structure (11).

16. Package according to claim 12, 13, 14 or 15, characterized in that in at least some of the parts of the film structure a passive element is present and manipulates radiation.

3. Package according to one of the preceding claims 12 through 16 claim 1 or 2, characterized in that the film structure (11; 43; 75) is comprised of a first film (29; 45; 71) in which on some parts (25; 77) of this film a second film (47; 73) or a sticker (23) is present.

4. Package according to one of the preceding claims 12 through 17 claims 1, 2 or 3, characterized in that the film structure (65) is comprised of two or more adjacent films (61, 63) with different characteristics.

5. Working method for separately packaging various types of food in a single package, comprising:

10

- placing food (17, 19) on a tray (3) with different compartments (5, 7, 9) open on one side, with one type of food (17, 19) being placed in each compartment (5, 7, 9),
- then placing a film structure (11) above the open sides of the compartments (5, 7, 9), whereby above each compartment a part (21, 23, 25) of the film structure (11) is placed, at least the characteristics of some of the specified parts (21, 23, 25) of the film structure (11) are different from each other,
- followed by sealing fastening the film structure (11) to the tray (3) around the openings of the compartments (5, 7, 9),

10 characterized in that the film structure (11) is comprised or processed such that the characteristics of at least some of the specified parts of the film structure are different from each other some of the parts (21, 23, 25) of the film structure (11) are gas permeable and/or are provided with a material in and/or on the film structure (11) which material reacts with gasses in the respective compartments (5, 7, 9).

15 2. Working method according to claim 1, characterized in that at the composition and/or processing of the film structure in at least some of the parts mentioned an active element is introduced into the film structure.

3. Working method according to claim 2, characterized in that the active element in the form of an active substance is placed in and/or on the parts of the film structure.

20 6. Working method according to claim 5, characterized in that at least some of the parts (21, 23, 25) of the film structure (11) are irradiated.

7. Working method according to one of the preceding claim 5 or 6, characterized in that perforations (31) are made in at least some of the parts (23) of the film structure (11).

25 6. Working method according to one of the preceding claims, characterized in that in at least some of the parts of the film structure a passive element is placed that manipulates radiation.

8. Working method according to one of the preceding claims 5 to 7, characterized in that the film structure (11; 43; 75) is comprised produced by taking

ef a first film (29; 45; 71) on parts (25; 77) of which with a second film (47; 73) or sticker (23) being is placed on parts of the first film.

9. Working method according to one of the preceding claims 5 to 8, characterized in that the film structure is comprised produced by fastening two films on each other, after which one of the films is removed locally.

10. Working method according to one of the preceding claims 5 to 9, characterized in that the film structure (65) is comprised produced of two or more adjacent films (61, 63) with different characteristics which are adjacent to each other.

11. Working method according to one of the preceding claims 5 to 10, characterized in that the composition and/or processing of the film structure takes place before food is placed on the tray.

12. Working method according to one of the preceding claims 5 to 11, characterized in that before the film structure is comprised and/or processed first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place in accordance with the characteristics of the food.

METHOD OF SEPARATELY PACKAGING DIFFERENT KINDS OF FOOD AND PACKAGE THEREFORE

5 BACKGROUND OF THE INVENTION

**Field of the invention**

The invention relates to a working method for separately packaging various types of food in a single package, comprising: placing food on a tray with various compartments that are open on one side with one type of food placed in each compartment after which a film structure is placed above the open sides of the compartments, whereby above each compartment a part of the film structure is placed, followed by fastening the film structure on the tray around the open sides of the compartments. The term film structure can be understood to mean either one single film or a combination of various films on and/or beside each other, as well as film with a substance or a sticker on it.

Such packages are usually intended to allow consumers to quickly and easily prepare their own meals. Many or all of the necessary ingredients are present so that the consumer himself need not buy all the ingredients separately.

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**Prior art**

Such a working method is known from European patent no. 0 293 794 B1. In this known working method various types of food are packaged in a single package. To improve the shelf life of the various types of food, in the known working method the various types of food are stored under different atmospheric conditions. Some types of food are preferably stored in an oxygen-low environment while others instead are better stored in an atmosphere that is rich in oxygen. To this end, in the known working method the option exists of introducing preservative gases into the package during packaging in the various compartments of the package. In the known working method the possibility also exists of creating overpressure, underpressure, or a vacuum in one or more of the compartments during packaging.

**Summary of the invention**

An objective of the invention is to provide a working method of the type described in the preamble for the packaging of various types of food in a single package, in which even better individual circumstances can be created for the various types of food than with the known working method. To this end the working method according to the invention is characterized by the fact that the film structure is composed and/or processed such that the characteristics of at least some of the specified parts of the film structure are different from each other. This creates circumstances for the food in the package that are even better adapted per type of food. For example the space in a compartment of the package can be fully sealed off from the outside environment by an gas-impermeable part of the film structure, or indeed interacting with the outside environment by way of a gas-permeable part of the film structure.

The differences between the characteristics of the parts of the film structure are preferably different in a material sense, for example gas permeability, which factors have an influence upon the condition of the food in the compartments. The imprinting of parts of a transparent film with ink has little or no effect on the condition of the food so there is hardly a difference from the parts of the film which are not imprinted.

By utilizing a differentiated film structure in which the closure of each compartment can be coordinated with the type of food present in the compartment and the condition of the food, an optimal environment can be created for the food. In this way even in a package where no separate gas atmospheres are present in the compartments good circumstances can nonetheless be obtained for the food.

An embodiment of the working method according to the invention is characterized by the fact that in the composition and/or processing of the film structure in at least a number of the specified parts an active element can be introduced into the film structure. The term active element should be understood to mean an element that reacts with substances in the food or substances that are emitted by the food.

Preferably the active element in the form of an active substance is placed in and/or on the parts of the film structure. For example the substance might be a material that reacts with the oxygen in the compartment and thus removes the oxygen from the compartment and the food. This is desirable for those types of food that can be stored best

in a low-oxygen atmosphere, for example for the protection of flavor and aroma against oxidation. Such substances are generally known, for example films that contain iron powder. The iron powder rusts and oxygen is withdrawn from the food and the atmosphere in the compartment. Instead of iron powder ascorbic acid or sulphite can also be used as an active substance. These substances, too, oxidize and oxygen is withdrawn from the food and the atmosphere in the compartment. In addition, enzymatic-acting substances can be applied to the film, such as glucose oxidase or ethanol oxidase in which enzymes are catalysts for an oxygen-consuming reaction.

The substance can also be a material, for example, that absorbs oxygen, for example a film of nylon polymer in which cobalt is present for a cobalt-catalyzed oxidation of the nylon polymer. Instead of, or in addition to, oxygen-absorbing substances, the film or sticker can also contain CO<sub>2</sub> absorbing or emitting substances, or ethylene absorbing substances, ethanol emitting substances, moisture-absorbing substances, etc. All of these substances are generally known.

The active element can also be formed by applying a film structure that is activated upon radiation. By only radiating a number of the parts of the film structure, a film structure with varying characteristics is created. The material of the film structure should in this case be such that its characteristics can be changed by radiation or because certain substances in the material of the film structure can be activated by radiation. For example the material of the film structure can discolor in response to radiation and form a light barrier. In addition, as a result of radiation the material can be activated such that for example it obtains the characteristic that it reacts to oxygen and thus removes the oxygen from the compartment. Such a film is known from European patent application EP-A 0 520 257. This known film contains a combination of an oxidizable organic compound and a metallic transference catalyst. Here oxidation of the organic compound can be initiated by radiation. The manner of radiating is known from the international patent application WO 99/21699. Through this reference both documents are included in the present patent application. In this way food can be packaged both in a low-oxygen environment and a high-oxygen environment in a single package.

Processing the film structure can comprise for example placing perforations in at least a number of the parts of the film structure, for example to allow the food to breathe. The size of the perforations or the number of perforations can be adjusted

depending on the degree of respiration of the food. A film with microperforations can also be used.

A further embodiment of the working method according to the invention is characterized in that at the composition and/or processing of the film structure in at least some of the parts of the film structure, a passive element is introduced that manipulates radiation. Under a passive element that manipulates radiation one should think of an element that can resist radiation - for example microwaves in a microwave oven - reflect them, redistribute them, or absorb them and convert them into heat. For example an aluminum film can modify the field in a microwave such that the capacity in the microwave unit is redistributed and even heating is obtained. Materials that can absorb microwave energy and convert it into heat are, for example, aluminum, stainless steel and inconel.

The composition of the film structure can for example take place by using first one film and then on parts of that film placing a second film or sticker. The second film or sticker can for example contain the above-mentioned active substance or consist of one of the above-mentioned materials that influence radiation. Or the first film can be perforated and the second film or sticker can be gas impermeable and seal off parts of the first film.

The film structure can also be composed for example by fastening two films to each other, after which one of the films is locally removed. The one film can for example be perforated and the other film can be a gas-impermeable film that is placed in separate parts on the perforated film. Parts of the gas-impermeable film can for example be peeled off the perforated film.

Yet another method of composing the film structure can for example be to place two or more films with different characteristics beside each other on the tray. For example the various films can contain an active substance, be perforated, be made of a radiation-influencing material, or be gas impermeable. Possibly the films can first be connected with each other before being placed on the tray.

The composition and/or processing of the film structure preferably takes place before food is placed on the tray. This decreases the chance that waste materials that may occur during the processing end up in the food.

Another favorable embodiment of the working method according to the invention is characterized in that, before the film structure is composed and/or processed, first the characteristics of the food are determined, after which the composition and/or

processing of the film structure takes place according to the characteristics of the food. Thus the conditions under which the food is stored can be better coordinated with the actual condition of the food. For example, if the respiration of the food is high, it may be desirable that the space in the compartment be more connected with the environment, such that a film structure with high permeability is desirable.

The invention also relates to a package manufactured according to the working method according to the invention comprising a tray with various compartments in which various types of food are present, with one type of food in each compartment, which compartments are closed off by a film structure that is connected to the tray around the openings of the compartments, where above each compartment part of the film structure is present.

As far as the package is concerned the invention is characterized in that the characteristics of at least some of the parts of the film structure are different. For example in at least some of the parts of the film structure there can be perforations, in and/or on at least a number of parts of the film structure an active element or active substance can be present, or at least in a number of parts of the film structure a passive element can be present that manipulates radiation.

In addition, the various characteristics can be acquired because the film structure is comprised of various films, for example a first film and a second film or a sticker that is present on parts of the first film, or two or more films beside each other with different characteristics.

#### **Brief description of the drawings**

The invention will be elucidated more fully below on the basis of drawings in which embodiments of the working method and the package according to the invention are shown. In these drawings:

Figure 1 shows an embodiment of the package according to the invention in a top view;

Figure 2 shows the illustration in Figure 1 as a cross-section;

Figure 3 shows a diagram of a first embodiment of the working method according to the invention;

CLAIMS:

1. Working method for separately packaging various types of food in a single package, comprising:
  - placing food on a tray with different compartments open on one side, with one type of food being placed in each compartment,  
5
  - then placing a film structure above the open sides of the compartments, whereby above each compartment a part of the film structure is placed,
  - followed by fastening the film structure to the tray around the openings of the compartments,
- 10 characterized in that the film structure is comprised and/or processed such that the characteristics of at least some of the specified parts of the film structure are different from each other.
2. Working method according to claim 1, characterized in that at the composition and/or processing of the film structure in at least some of the parts mentioned  
15 an active element is introduced into the film structure.
3. Working method according to claim 2, characterized in that the active element in the form of an active substance is placed in and/or on the parts of the film structure.
4. Working method according to claim 2 or 3, characterized in that at least  
20 some of the parts of the film structure are irradiated.
5. Working method according to one of the preceding claims, characterized in that there are perforations in at least some of the parts of the film structure.
6. Working method according to one of the preceding claims, characterized in that in at least some of the parts of the film structure a passive element is placed that  
25 manipulates radiation.
7. Working method according to one of the preceding claims, characterized in that the film structure is comprised of a first film with a second film or sticker being placed on parts of the first film.
8. Working method according to one of the preceding claims, characterized in  
30 that the film structure is comprised by fastening two films on each other, after which one of the films is removed locally.
9. Working method according to one of the preceding claims, characterized in

that the film structure is comprised of two or more adjacent films with different characteristics.

10. Working method according to one of the preceding claims, characterized in that the composition and/or processing of the film structure takes place before food is placed  
5 on the tray.

11. Working method according to one of the preceding claims, characterized in that before the film structure is comprised and/or processed first the characteristics of the food are determined, after which the composition and/or processing of the film structure takes place in accordance with the characteristics of the food.

10 12. Package manufactured according to a working method according to one of the preceding claims, comprising a tray with various compartments in which different types of food are present, with one type of food being present in each compartment, which compartments are closed off by a film structure that is fastened to the tray around the openings of the compartments, with part of the film structure being present above each  
15 compartment of the tray, characterized in that the characteristics of at least a number of parts of the film structure are different from each other.

13. Package according to claim 12, characterized in that in at least some of the specified parts an active element is present in the film structure.

14. Package according to claim 13, characterized in that the active element in the  
20 form of an active substance is present in and/or on the parts of the film structure.

15. Package according to claim 12, 13 or 14, characterized in that there are perforations in at least some of the parts of the film structure.

16. Package according to claim 12, 13, 14 or 15, characterized in that in at least some of the parts of the film structure a passive element is present and manipulates  
25 radiation.

17. Package according to one of the preceding claims 12 through 16, characterized in that the film structure is comprised of a first film in which on parts of this film a second film or a sticker is present.

18. Package according to one of the preceding claims 12 through 17,  
30 characterized in that the film structure is comprised of two or more adjacent films with different characteristics.

1 / 3

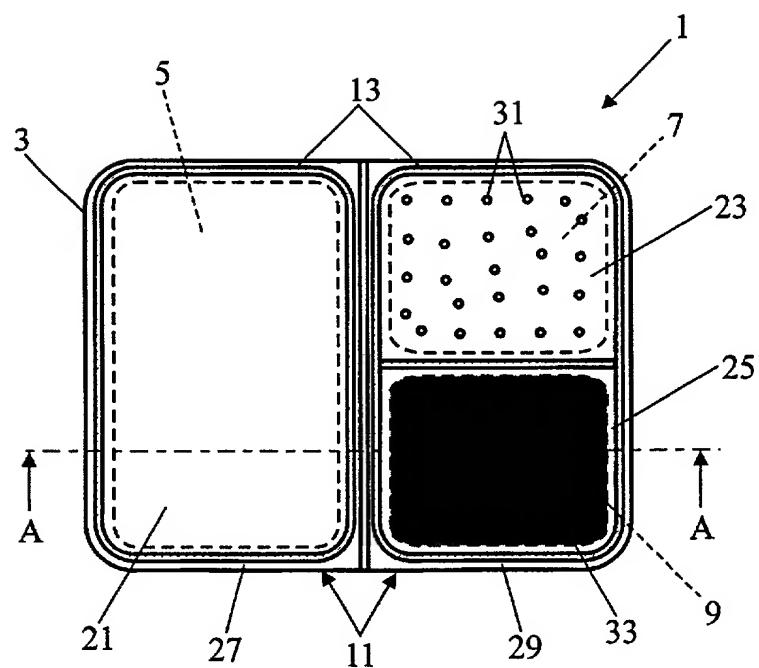


FIG. 1

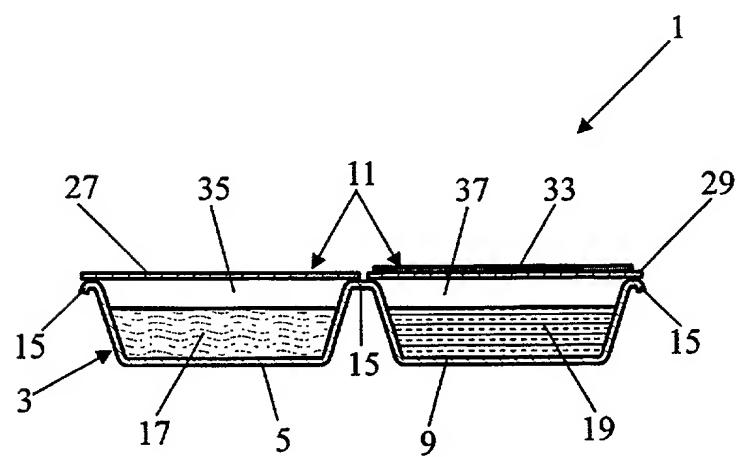


FIG. 2

2 / 3

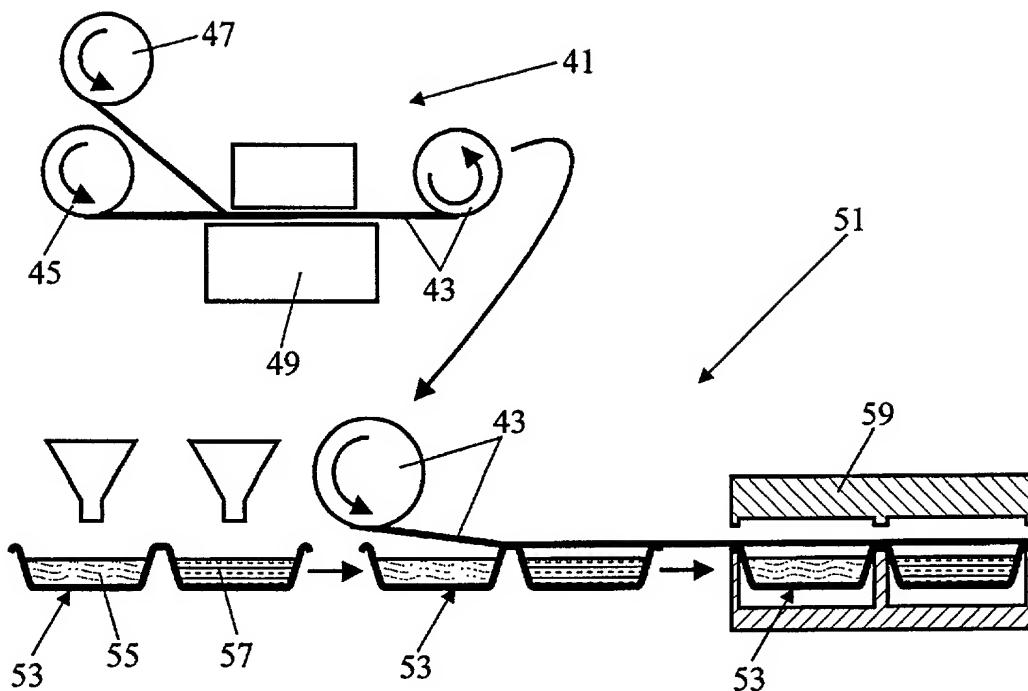


FIG. 3

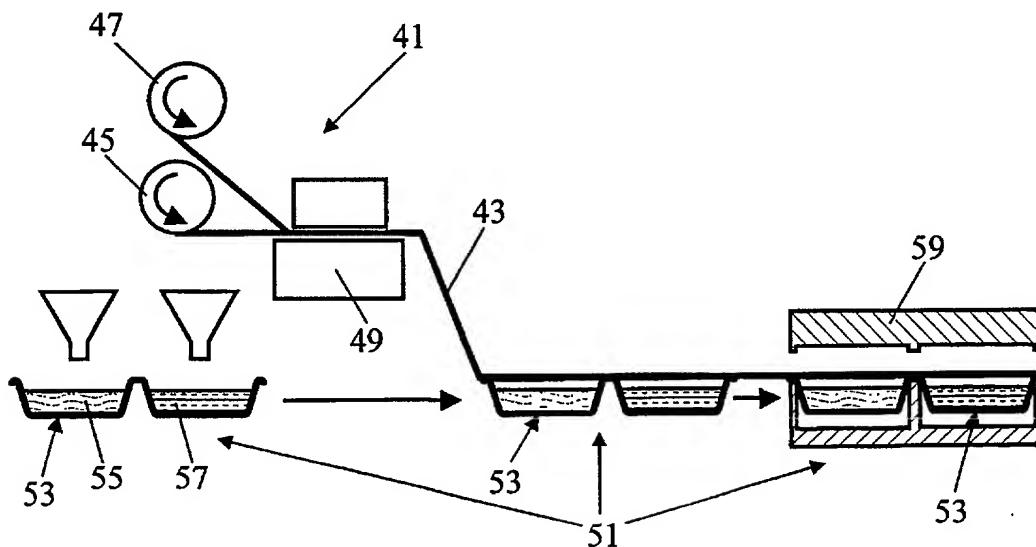


FIG. 4

3 / 3

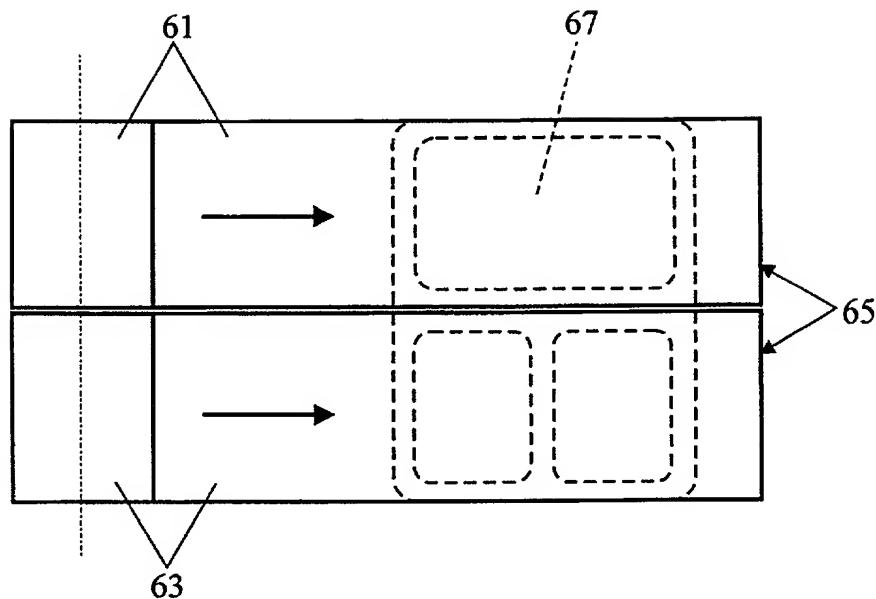


FIG. 5

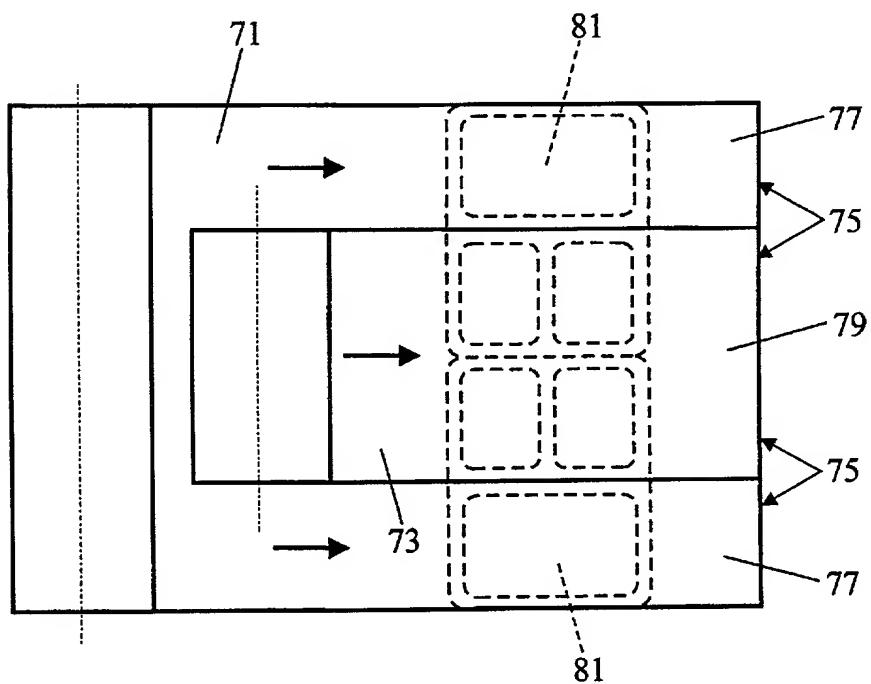


FIG. 6

**DECLARATION AND POWER OF ATTORNEY  
FOR PATENT APPLICATION**

VERHEES 207-KFM  
P.BONG/US-0396

As the below named inventors, I/We hereby declare that:

My/Our residence, post office address and citizenship is as stated below next to my/our name.

If one name appears below, I am the sole inventor of the subject matter sought to be patented.

If two or more names appear below, we are joint inventors of the subject matter sought to be patented.

I/We believe I/We am/are the original; and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**WORKING METHOD FOR SEPARATELY PACKAGING VARIOUS  
TYPES OF FOOD IN A SINGLE PACKAGE AS WELL AS PACKAGE  
MANUFACTURED ACCORDING TO THIS WORKING METHOD**

the specification of which

[ ] is attached hereto.

was filed on December 14, 2001 as application Serial No. 10/018,675.

I/We hereby state that I/We reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I/We acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I/We also acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.63(d), which occurred between the filing date of the prior application and the filing date of the continuation-in-part application, if this is a continuation-in-part application.

I/We hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for the patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application: NETHERLANDS Application No. 1012346  
filed June 16, 1999

Priority Claimed: X Yes    No

 9/16/02

Prior Foreign Application: PCT Application No. PCT/NL00/00423  
filed June 16, 2000

Priority Claimed: X Yes        No

I/We hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Serial No.	Filing Date	Status (patented, pending, abandoned)
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Application Serial No.	Filing Date	Status (patented, pending, abandoned)
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I/We hereby declare that all statements made herein of my/our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I/We hereby appoint the following attorneys and/or agents to represent me with respect to the above identified U.S. Patent Application, and to prosecute any continuations, continuations-in-part, reissue applications and/or reexaminations with respect to these applications and to transact all business in the Patent and Trademark Office connected therewith, and hereby expressly revoke all prior powers, whatever they may be, heretofore had herein:

Karl F. Milde, Jr., Reg. No. 24,822 and Steven M. Hoffberg, Reg. No. 33,511, both of 10 Bank Street, Suite 460, White Plains, New York 10606, my/our attorneys with full power of substitution and revocation.

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NAME OF INVENTOR

INVENTOR'S SIGNATURE

9/1/02

DATE

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RESIDENCE

DUTCH  
CITIZENSHIP

NLX

SAME AS ABOVE

POST OFFICE ADDRESS